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TAXONOMIC STUDIES IN *EUPHRASIA* L. (SCROPHULARIACEAE). VII. A NEW SPECIES AND A WIDELY DISJUNCT POPULATION FROM SOUTH-EASTERN TASMANIA

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Abstract

A new species *E. fragosa* from south-eastern Tasmania restricted to two sites near Southport and on south Bruny Island on either side of the D'Entrecasteaux Channel is formally described. It belongs to Sect. *Striatae* and is closely allied to *E. striata* and *E. semipicta*. It is endangered owing to its being known from two populations with limited numbers of plants. An outlying population of *E. collina* ssp. *diemenica* confined to the summit of a small mountain on the Tasman Peninsula is identified.

As a result of an opportunity provided by the Parks and Wildlife Service, Department of Environment and Land Management in Tasmania to see plants in the field, it is now possible to clarify the taxonomy of two taxa of *Euphrasia* for which previously there had been inadequate information.

This paper is part of continuing revisional research by the author into the genus (for previous papers see Barker 1987; also Barker, Kiehn & Vitek 1988). The paper also contributes to a series of studies by the Tasmanian Parks and Wildlife Service supported by funding from the Australian Nature Conservation Agency aimed at providing a solid information base for development of management plans of rare and threatened *Euphrasia* taxa in south-eastern Tasmania.

A new species from Southport and Bruny Island previously recognised informally

In 1982 several herbarium specimens were recognised informally by the author (Barker 1982) under the phrase name *E.* sp. *"Southport"* as a likely new species intermediate morphologically between *E. striata* R.Br. and *E. semipicta* W.R.Barker. Dr Winifred Curtis in 1958 had collected one or two plants from the area of the original specimens collected near Southport over a century earlier. No other specimens existed. Subsequently, in 1986 Mr Phil Collier made further collections, locating the plant across D'Entrecasteaux Channel on South Bruny Island (Collier 1990). Through examination of the plant in the field by the author in late 1995, which established the variability of the various diagnostic characters and absence of intergradation with related species, the species can be now formally named and a more complete description of its variability given.

Euphrasia fragosa W.R. Barker, *sp. nov.*

E. sp. *"Southport"*: W.R.Barker, J. Adelaide Bot.Gard. 5 (1982) 139, f. 45.

Species nova Sectionis *Striatae*, absentia indumenti glandulosi *E. striatae* et *E. semipictae* affinis, sed a duo dentibus foliorum paucioribus, in corolla cucullo angustiore fissura breviore, labio inferiore minore, antherisque aristis posticis brevibus, et ab *E. striata* ramificatione super terram, internodiis, saepe longioribus, tubo corollae breviore, apice capsulae angustiore seminibusque minoribus differt.

Holotypus: *W.R. Barker 7678 & W. Potts*, 10.xii.1996, 'Seaview', a property at the entry of Southport bay, west of Point Rossel, c. 3 km E of Hythe. Locally common, on vehicular and cattle tracks or other open sites with fine grasses and small herbs, on south facing clayey slope under *Eucalyptus tenuiramis* open forest burnt some years prior, with very open shrubbery of *Leptospermum scoparium, Melaleuca squarrosus* over *Gahnia grandis, Lomandra, Gleichenia.* Erect perennial herb to c. 25 cm high. Corolla mid blue-purple with white mouth, consistently extensively red-purple striated on all 3 lobes and in hood, with yellow spot, sometimes faint, on lower side of mouth. Single specimen per plant collected. AD. ***Isotypi***: HO, other duplicates for distribution.

Perennial *herb*, 16.5-32 cm tall, apparently in first year with a single erect stem bearing axillary shoots and ascending to erect branches in lower aerial parts, dying back to uppermost branches after first year. *Stem* bearing inflorescence in first year, 13.5–28 cm high to its base, bearing 17–26 pairs of leaves, often branched with uppermost branches or shoots reaching to c. 3–6 nodes below inflorescence, sometimes simple; *internodes* between uppermost (3) 4–8 (10) leaf pairs longer than leaves, the longest internode (2.5) 3–6 times length of uppermost leaves, in lower parts much shorter than leaves; axes purple-brown with 2 bands of moderately dense retrorse white eglandular hairs (0.05) 0.1 (0.15) mm long. *Leaves*: uppermost leaves of flowering stem or main inflorescence-bearing branch (5.0) 5.5–10.0 (10.7) mm long, in outline obovate (2.4) 3.1–5.0 (5.2) mm wide, green, sometimes reddened in parts, glabrous but for tiny scaberulous eglandular hairs on the adaxial surface of the apical tooth and sessile gland patches on the lower side confined to distal (0.35) 0.40–0.55 of lower surface; *base* long attenuate; *teeth* 1 pair, rarely a second tooth down one margin, bluntly to sharply acute, confined to distal (0.15) 0.20–0.30 (0.40) of leaf, with longest tooth (0.45) 0.7–1.7 (2.0) mm long; *apical tooth* bluntly obtuse to acute, rarely almost caudate, (1.1) 1.4–2.5 (2.9) × (1.1) 1.4–2.2 (2.5) mm; leaves *lower down* and those on branches of similar shape, but slightly smaller, much smaller on shoots. *Inflorescences* but for lowermost 0–3 nodes dense, that of main axes bearing c. 14–25 or more flowers, with lowest nodes sometimes bearing one flower, those on lateral branches with fewer flowers; *rachis* as for axes; *internodes* longer at lower nodes possibly elongating slightly after anthesis; *pedicels* of lowest flowers c. 1–4 mm long, shorter towards apex; *apical bud cluster* excluding buds rounded-conical, initially 0.6–2.2 cm long, becoming hidden by corollas of uppermost flower pair at first 2–4 nodes. *Bracts* similar to uppermost leaves. *Calyx* 4.7–5.5 mm long, 4-ribbed, externally glabrous, internally glabrous but for very short eglandular hairs inside teeth, extending onto margins; *teeth* bluntly to sharply acute; *lateral clefts* 1.4–1.8 mm deep, shorter than *median clefts*, which are c. 2.2–2.5 mm deep. *Corolla* 8.0–9.0 mm long along upper side, mid to deep blue–purple outside and inside, with a white mouth inside; the lower lobes and hood deep red–purple striated, each to be usually with 3 striations, the lowest sometimes with just a single striation, with a yellow spot, rarely faint on the lower side of the mouth; *tube* 4.7–5.5 mm long abaxially and laterally broadened at about point of insertion of anterior filaments, which are 4.0–5.0 mm from base of corolla, externally glabrous, except for very short glandular hairs at point of insertion of anterior filaments; *hood* 2.5–2.8 mm long, excluding lobes 2.5–3.0 mm wide, including lobes c. 3.0 mm wide, externally moderately densely eglandular hairy; *upper lobes* ± in same plane, facing forwards, shallowly emarginate, with cleft between 0.7–1.0 mm deep; *lower lip* concave from above, downturned from base, 2.6–4.0 × c. 7.5 mm, externally glabrous but for scattered eglandular hairs; *lower lobes* emarginate, the lateral ones c. 2.0–2.2 mm wide, clefts between 1.6–1.9 mm deep. *Stamens* with filaments glabrous, the anterior pair 2.8–3.5 mm long, the posterior pair c. 1.5–1.6 mm long; *anthers* 1.4–1.5 x 0.8–1.0 mm, with area around *connectives* glabrous, with *slits* lined by short to moderately long eglandular hairs, with rearmost pair of *awns* 0.2–0.3 mm long, longer than other three pairs which are 0.1(0.15) mm long. *Ovary* in lateral view ovate-elliptic, slightly compressed laterally, in median view ovate, glabrous but for a few setae on apex; apex in lateral view obtuse; *ovules* c. 70–80. *Capsules* 7.3–9.0 mm long, compressed laterally, in lateral view elliptic 2.2–3.2 mm broad, in median view ovate to ovate-acuminate, glabrous but for few to several, sparse to moderately dense, short setae at very apex; *apex* in lateral view obtuse or obliquely so. *Seeds* (mostly young seen) c. 25–45, obliquely broad ellipsoid, 0.65–0.9 (?1.4) mm long, 0.4–0.6 mm wide.

Distribution (Map 1) *and ecology*

The species is known from south-east Tasmania in two locations about 7 km apart on either side of a water barrier the D'Entrecasteaux Channel, at the northern headland of the bay Southport and on Mt Bleak on Labillardiere Peninsula, South Bruny Island.

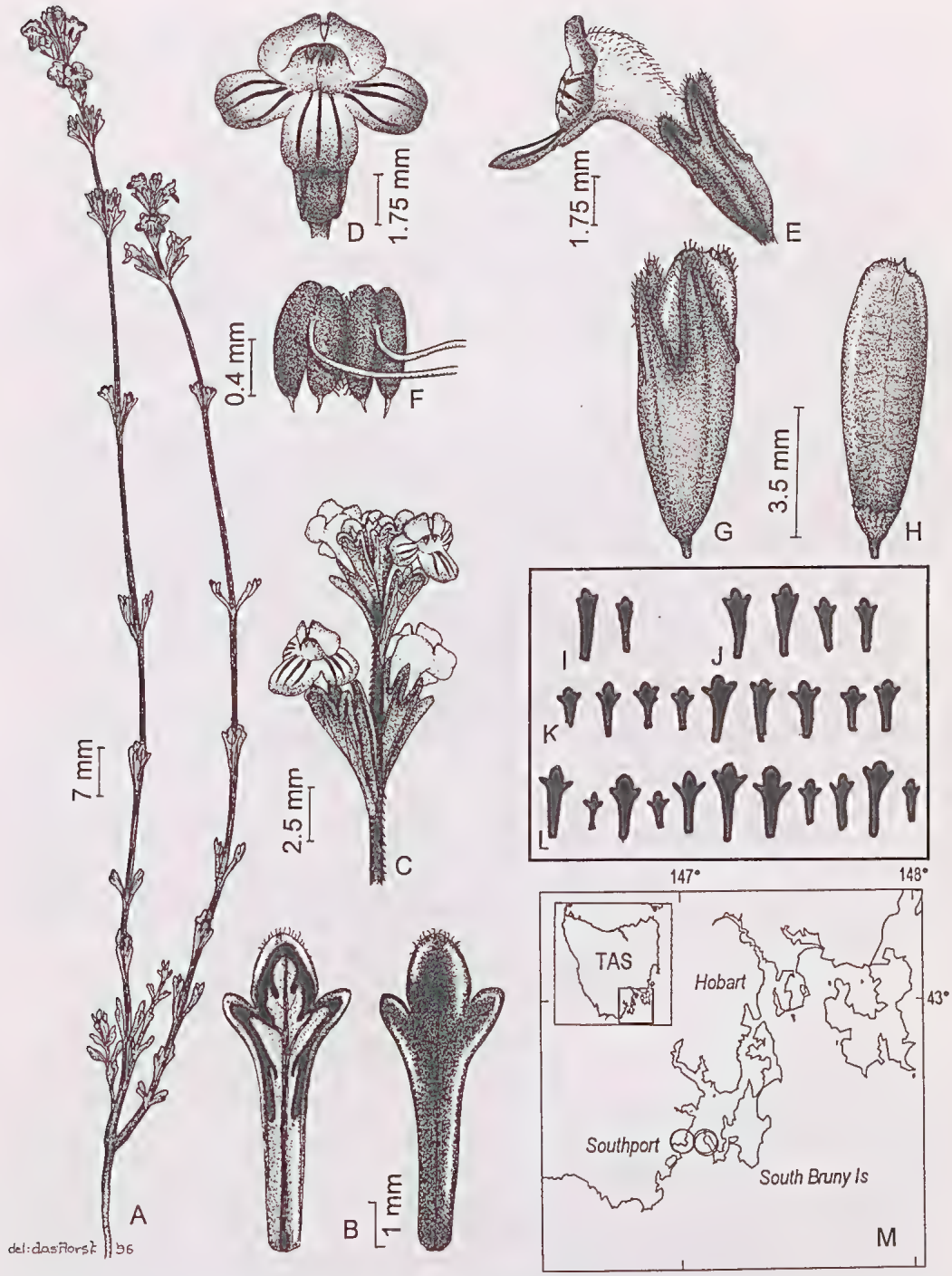

Fig. 1. ***Euphrasia fragosa*** W.R. Barker. A, habit; B, upper stem leaf (abaxial and adaxial view); C, inflorescence, D–E, flower front and side view; F, stamens outer surface, lateral view; G, fruit, lateral view; H, capsule, calyx removed (A–F, *Barker 7677*, plant 3; G–H, *Barker 7678*, plant 6; del. G. Dashorst). I–L, uppermost leaves on main inflorescence subtending branch, actual size (I, *Barker 7666*; J, *Barker 7667*; K, *Barker 7677*, L, *Barker 7678*). M, distribution in south-east Tasmania.

It occurs in open sites with small herbs and fine grasses disturbed by proximity to vehicular or animal tracks, in the former location in open *Eucalyptus* forest with open shrubbery, in the latter in open woodland or adjoining dense shrubbery. The locations had been subjected to fire some years before.

Conservation status

E. fragosa occurs on land under reservation on the Labillardiere Peninsula, but this is the smaller of the populations and may be questionably viable in the long term. In the Southport location plants are more abundant, but the minimum population size for long term viability is unknown and one of the two known populations is threatened by development of a resort (W. Potts, pers. comm. 1995, 1996). As a result a status of 2Ec is suggested, following the classification of Leigh, Briggs & Hartley (1981). Dr W. Potts is researching various aspects of the biology of the species with the view to developing a management plan for its conservation.

Notes

1. *E. fragosa* belongs with Sect. *Striatae* by its striated flowers and glabrous anther backs. Through the lack of glandular hairs on its branches, leaves, rhachis and calyx and short toothed leaves it is closest allied to *E. striata* and *E. semipicta*. It differs from both species by its on average fewer leaf teeth, in the corolla by its narrower hood with shorter cleft between the upper lobes and smaller lower lip and by its shorter rearmost anther awns. It also differs from *E. striata* by its branching above ground level, its often longer internodes, its shorter corolla tube, its narrower capsule apex and its smaller seeds. Within the variable *E. semipicta* (Barker 1982) it is closest allied to the forms with white corollas and glabrous or sparingly hairy anther backs.
2. The species epithet derives from the Latin adjective *fragosus*, meaning fragile or broken, alluding to three characteristics of the plant: its delicate habit, its vulnerability in the face of human activities, and its disjunct range of distribution.

Further specimens examined

TASMANIA. ***East Coast***: *W.R. Barker 7666 & W. Potts*, 8.xii.1996, Labillardiere Peninsula State Reserve, South Bruny Island, E slopes of Mt Bleak, AD, HO; *W.R. Barker 7667 & W. Potts*, 8.xii.1996, Labillardiere Peninsula State Reserve, South Bruny Island, W facing upper slopes of Mt Bleak, AD, HO. ***South West***: *W.R. Barker 7677 & W. Potts*, 10.xii.1996, 'Seaview', a property on at the entry of Southport bay, west of Point Rossel, c. 2.5 km E of Hythe, AD, HO; *P. Collier 1823*, 8.xi.1986, Labillardiere Peninsula, South Bruny Island, HO; *W. Curtis s.n.*, 5.xii.1958, Southport, HO; [*Stuart 1744*], xii.1855, South Port, MEL41437 p.p.; *Stuart 1744 (p.p.)*, xii.1856, South Port, MEL41450 p.p.

A widely disjunct Tasman Peninsula population of *E. collina* R.Br. ssp. *diemenica* (Spreng.)W.R.Barker

Two collections by Allan and Moscal from Mt Brown on West Arthur Head at the entrance of Port Arthur on Tasman Peninsula with densely hairy anther backs in the past have been questionably determined by the author as *E. semipicta* or *E. collina* in the absence of data on the variation in anther indumentum and in corolla coloration. Examination of the extensive population confined to the summit showed it to be *E. collina* by the lack of striations marking the corollas and the consistently densely hairy anther backs. It falls within circumscription of ssp. *diemenica* by the lack of branching above ground level, the leaves with a single pair of short teeth and the limited extent of the lateral branches of the sessile gland patches. This subspecies is highly polymorphic with ecotypic and geographical races evident (Barker 1982). The relationships of the Mt Brown population should be determined in the context of a revision of the ssp. *diemenica*.

This restricted population occurs 60 km south-east of the nearest locations of *E. collina* ssp. *diemenica* on the summit area of Mt Wellington and is in a State Reserve. Taking into

account the alpine and subalpine habitats of ssp. *diemenica* elsewhere, its highly exposed windswept situation may be important to its survival.

Specimens examined

TASMANIA. *East Coast*: *M. Allan s.n.*, s.dat., Brown Mtn, HO35092; *W.R. Barker 7672 & W.Potts*, 9.xii.1995, On W lower end of summit ridge of Mt Brown, AD, HO (dupl. for distribution); *W.R. Barker 7676 & W. Potts*, 9.xii.1995, Summit of Mt Brown, c. 30 m W of trig point, AD, HO (dupl. for distribution); *A. Moscal 4635*, s.dat., Mount Brown, HO401919; *B. Potts & G. Jordan per W.R. Barker 7673*, 9.xii.1995, On SW extension of summit of Mt Brown, AD, HO.

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